

# Uber Fare Prediction

## About

Uber Fare Prediction is a machine learning project aimed at estimating the cost of a ride based on various factors such as distance, time of day, location, and weather. The objective is to develop an accurate model using historical data to predict fares.

## Top 5 Features

- Distance (km)
- Year
- Dropoff Latitude
- Dropoff Longitude
- Pickup Longitude

## Observations

- The high  $R^2$  score of 0.77 suggests the models are performing well and explain most of the variability in the target variable.
- Distance is the most impactful feature, as expected, because taxi fares are directly related to the trip's length.
- Geographic features (latitude and longitude) emphasize the importance of spatial data in predicting fares.
- Temporal data (year) likely captures fare changes over time or seasonal patterns.

## Strategy

1. Pricing Strategies: Implement a dynamic pricing model where longer trips are priced competitively to attract customers, while shorter trips can have a higher price-per-km ratio to maximize revenue.
2. Driver Incentives: Drivers are critical to the system, and the model can be used to predict optimal fare structures that keep drivers motivated while ensuring affordability for customers.

3. Reduce Wait Times: Ensure a higher density of drivers in regions where demand is high to minimize customer wait times.
4. Real-Time Fare Transparency: Clearly communicate how fares are calculated (e.g., distance, time, location) to improve customer trust.
5. Monitor and Evaluate Model Performance: The model's  $R^2$  score of 0.77 indicates good performance but leaves room for improvement. Regularly retrain the model with updated data to ensure predictions remain accurate.

## **Conclusion**

Implementing these recommendations can optimize fare strategies, enhance driver satisfaction, and improve overall service quality, ensuring a competitive edge in the ride-sharing market.